

Hydropower Wave of Utah's energy future

Water power plants churning up state's energy needs and environmental issues

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Early next summer, a worker at the Jordanelle Dam will turn a valve, sending as much as 600 cubic feet of water per second through two turbines capable of generating a dozen megawatts of electricity for Heber Light and Power.

The \$20 million project, expected to be completed in May or June, is the first hydropower project to be built in Utah in nearly a decade. And it could mark the beginning of a new surge in hydropower development that some view as a source of environmentally friendly power for an energy-hungry state.

"Obviously, with the push toward more renewable energy there is bound to be more interest in hydropower. Many projects will become more economically viable as energy costs increase," said Craig Broussard, general manager of the electric utility that serves about 9,000 customers in the communities of Heber City, Midway and Charleston Town.

Hydropower is one of the most efficient ways to generate electricity, according to the National Hydropower Association. Modern hydroelectric turbines are capable of converting up to 90 percent of the energy from flowing water into electricity. Plants that burn coal or other fossil fuels are only about 50 percent efficient.

Although Utah never will rival the Pacific Northwest in hydropower potential, the state does generate about 260 megawatts of electricity a year from 29 generating projects on its reservoirs and waterways, according to the Utah Geological Survey. Those resources range from the three, 51 megawatt generators at Flaming Gorge to the diminutive one megawatt generating station operated by Rocky Mountain Power at the mouth of Big Cottonwood Canyon in Salt Lake.

A megawatt is enough energy to meet the electrical needs of approximately 750 homes at any given moment.

Getting a hydropower project approved by federal and state regulators, however, is a daunting task that often requires years of effort. Heber Light started thinking about its Jordanelle project 15 years ago and has been working on it in earnest for the past seven years.

"Over the past 30 years the environmental laws have become more and more restrictive. You just can't throw up a dam on a river," said Jason Berry, renewable energy coordinator at the Utah Geological Survey.

And that helps explain why more than half the hydropower projects generating electricity in Utah are more than 40 years old, with many of those facilities built in the early years of the last century.

Berry pointed out, though, that so-called run-of-the-river hydroelectric projects that don't involve dams but instead take water from an existing stream, divert it through turbines and then return it to the natural flow of the river are easier to gain approval to develop.

The Jordanelle Dam plant is such a project, said Gene Shawcroft of the Central Utah Water Conservancy District, which is participating in the development as a partner with Heber Light and Power.

It will use water that normally flows unimpeded from the Jordanelle Dam, direct it through the turbines and then return it to the natural flow of the Provo River, only a few feet from where it would originally have entered, Shawcroft said.

The Utah chapter of Trout Unlimited, which is particularly interested in maintaining the Provo river as a world-class fishery, carefully studied the hydropower project to ensure that safeguards were in place to limit the impact on flow and they quality of the water.

"The last thing we would want to see is that river pulsing up and down," said Paul Dremann, vice president of conservation of Trout Unlimited in Utah. "On paper, there shouldn't be any significant impact on the Provo River."

Trout Unlimited is taking a much more critical look at another proposed hydroelectric project, on the east side of Bear Lake in Rich County, known as the Hook Canyon Pumped Storage Project. Logan-based Symbiotics Energy proposes to pump 21,000 acre feet of water out of Bear Lake to a storage reservoir each night when electricity prices are at their lowest. (An acre foot is the volume of water necessary to cover one acre to a depth of one foot)

Water would be released from the basin to turn a turbine that would generate power during the afternoons and evenings, so they can sell their electricity when prices and demand typically are at their peak, said Brian Cole of Symbiotics Energy, a company founded in 2001 to focus on the hydropower development in western states.

"We've recently submitted our license application" to the Federal Energy Regulatory Commission, Cole said. "Once that is approved, we're facing three years of studies and analysis of the project. Realistically, we're probably looking at 2014 before it will be ready to produce electricity."

But Kirk Dahle of Trout Unlimited sees big problems with that project.

"It is going to result in a net loss of electricity," he said, explaining that it will take more energy to pump the water to the storage reservoir than will be produced when it is allowed to flow back into Bear Lake. "They really only want to play an accounting game by taking advantage of price differentials in the energy markets over the course of a day."

Dahle contends that pumping 21,000 acre of feet of water will be enough to cause the level of Bear Lake to fluctuate two-and-a-half inches a day and disrupt the fish habitat in the lake. "And they want to take that water from Cisco Beach, which is some of the only spawning grounds for Bear Lake Sculpin and White Fish, which are found nowhere else."

Cole said the licensing and hearing process will bring everyone interested in the project together to get an understanding of the proposal. "Everyone will be at the table."

Perhaps the most ambitious hydroelectric project on the drafting tables is one being backed by the state.

The Lake Powell Pipeline Project would be designed to help meet the water demands of the growing population in southern Utah. It would consist of 120 miles of 66-inch pipe from Lake Powell to the Sand Hollow Reservoir east of Kanab and another 38 miles of 30-inch pipeline from Sand Hollow to Cedar City.

Three hydroelectric power stations, one a pumped-storage project near Hurricane, would be situated along those pipeline routes and be capable of generating up to 443 megawatts of electricity.

The Utah Legislature in 2006 passed a bill to divert some of the state's sales-and-use tax revenues to the Utah Division of Water Resources to cover initial costs of the Lake Powell Pipeline, said Eric Millis, cq the division's deputy director.

"There is a lot of work to be done, though, before that project gets off the ground," Millis said. "We're looking at about 2013 for the engineering design for what could be a \$500 million project."

Millis said even though the state probably will be involved in financing the project, the costs will be repaid by the water districts in Washington, Kane and Iron counties. "The electricity the project will generate should help them pay for those costs."

State energy director Dianne Nielsen, who serves as an adviser to Gov. Jon Huntsman, said she isn't surprised by the increasing interest in hydropower in Utah.

"With energy prices being what they are, there is a lot of interest right now in identifying resources that aren't being fully exploited," she said.

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